

additional data for transport time reference, thereby delivering digital data recorded in a disk to an external device such as a digital TV without deviation of transmitting-time interval between transport packets.

5 Although the preferred embodiment of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the
10 invention as recited in the accompanying claims.

What is claimed is:

1. A data recording method for a disk recording medium, comprising the steps of:

15 (a) inserting time information for transport time reference in transport packets at arbitrary intervals and recording the transport packets in the disk recording medium, wherein the intervals are shorter than a time interval specified in a digital broadcast standard;

20 (b) identifying a transport packet in which the time information is inserted and detecting the recording position of the identified transport packet; and

 (c) writing the detected recording position in the header of a pack which is composed of several recorded transport packets.

25 2. The method set forth in claim 1, wherein said step (c) further writes the time information inserted in the identified transport packet in the header of a pack.

 3. The method set forth in claim 1, wherein the time information for transport time reference is equal to a
30 program clock reference which should be contained intermittently in a data stream of broadcast program.

 4. A method for reading and transmitting data

recorded in a disk recording medium, comprising the steps of:

(a) reproducing a predetermined-sized pack recorded in the disk recording medium;

5 (b) reading information on a recording position recorded in a header of the reproduced pack;

(c) reading time information for transport time reference recorded in a packet header of a transport packet located in a position indicated by the read position
10 information; and

(d) transmitting the transport packet located in the position indicated by the read position information on time specified by the read time information.

5. The method set forth in claim 4, wherein the time
15 information for transport time reference is equal to a program clock reference which should be contained intermittently in a data stream of broadcast program.

6. A method for reading and transmitting data recorded in a disk recording medium, comprising the steps
20 of:

(a) reproducing a predetermined-sized pack recorded in the disk recording medium;

(b) reading recording position information and time information for transport time reference recorded in a
25 header of the reproduced pack; and

(c) transmitting the transport packet located in a position indicated by the read position information on time specified by the read time information.

7. A data recording method for a disk recording
30 medium, comprising the steps of:

(a) recording transport packets in the disk recording medium while grouping several transport packets into a pack; and

(b) writing time information for transport time reference for a transport packet, which is in a pre-specified position in the pack, in a header of the transport packet.

5 8. The method set forth in claim 7, wherein the time information for transport time reference is equal to a program clock reference which should be contained intermittently in a data stream of broadcast program.

9. The method set forth in claim 7, wherein the pre-
10 specified position is the first.

10. A data recording method for a disk recording medium, comprising the steps of:

(a) recording transport packets in the disk recording medium while grouping several transport packets into a
15 pack; and

(b) writing time information for transport time reference for a transport packet, which is in a pre-specified position in the pack, in a header of the pack.

11. The method set forth in claim 10, wherein said
20 step (b) writes a program clock reference as the time information for transport time reference, if the transport packet at the pre-specified position contains the program clock reference which is specified to be included intermittently in a data stream by the digital broadcast
25 standard.

12. The method set forth in claim 10, wherein the pre-specified position is the first.

13. A method for reading and transmitting data recorded in a disk recording medium, comprising the steps
30 of:

(a) reproducing a predetermined-sized pack recorded in the disk recording medium;

(b) reading time information for transport time

reference recorded in a header of a transport packet which is in pre-specified position; and

(c) transmitting the transport packet located at the pre-specified position on time specified by the read time
5 information.

14. The method set forth in claim 13, wherein the time information for transport time reference is equal to a program clock reference which should be contained intermittently in a data stream of broadcast program.

10 15. The method set forth in claim 13, wherein the pre-specified position is the first.

16. A method for reading and transmitting data recorded in a high-density disk recording medium, comprising the steps of:

15 (a) reproducing a predetermined-sized pack recorded in the disk recording medium; and

(b) transmitting a transport packet located at a pre-specified position in the reproduced pack based on time indicated by time information recorded in a header of the
20 reproduced pack.

17. The method set forth in claim 16, wherein the pre-specified position is the first.

18. A disk stroage device containing data of a program recorded in a plurality of predetermined-sized
25 packs, information on a recording position in a pack of a transport packet having time information for transport time reference being recorded in a header of the pack, wherein the program data are composed of predetermined-sized transport packets.

30 19. The device set forth in claim 18, wherein the time information for transport time reference recorded in the transport packet is further recorded in the header of the pack.

20. A disk stroage device containing data of a program recorded in a plurality of predetermined-sized packs, transport time reference information for a transport packet located at a pre-specified position in a pack being
5 recorded in a header of the pack, wherein the program data are composed of predetermined-sized transport packets.

21. A disk stroage device containing data of a program recorded in a plurality of predetermined-sized packs, transport time reference information for a transport
10 packet located at a pre-specified position in a pack being recorded in a header of the transport packet, wherein the program data are composed of predetermined-sized transport packets.

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